NOISE POLLUTION

FAA Turns Down the Volume

According to the 1998 annual report of the Air Transport Association, U.S. airlines flew 423.3 billion passenger miles in 1987, a number that grew to 619.5 billion miles in 1998. According to the Federal Aviation Administration (FAA), air traffic is expected to double nationally by the year 2017. Increased air traffic also means an increase in airplane noise. To help regulate the impact of noise on the environment, the FAA established the Airport Noise and Capacity Act in 1990, which required all civil jet aircraft over 75,000 pounds to reduce noise and lessen their environmental effects overall by 1 January 2000.

According to the FAA's 1998 progress report to Congress on the transition to quieter airplanes, aircraft have fully met these requirements. "This report demonstrates that we are moving forward in the reduction of aircraft noise in the nation's skies, and that the U.S. airline industry will continue with efforts to reduce noise and improve environmental impacts," says Secretary Rodney Slater of the Department of Transportation.

The Airport Noise and Capacity Act requires that older, so-called stage 2 aircraft meet the noise standards applied to the quieter stage 3 aircraft being built today, which incorporate the latest technology for suppressing jet-engine noise. Usually stage 3 aircraft are 10 decibels quieter than stage 2 aircraft. An increase of 3 decibels is equivalent to a doubling of the sound energy.

Despite the quieter standards, an increase in air traffic operations concerns people such as Anne Kohut, publisher of the *Airport Noise Report*, a biweekly newsletter. Kohut believes it's hard to tell exactly what effects noise pollution has on health because of the paucity of studies performed. The studies that have been performed do provide some indication, however, of the impact noise pollution may have on health.

Plane pain. Regulations to reduce noise from airplanes may soon lower noise-related health effects such as stress, particularly among children.

Research published in volume 10 (1993) of *Children's Environments* by Gary Evans, a professor of design and environmental analysis at Cornell University, and Stephen J. Lepore, an associate professor of psychology at Carnegie Mellon University, suggests that living or attending school near a major noise source can lead to elevated blood pressure in children. Research published in the September 1997 issue of *Environment and Behavior* by Evans found that children chronically exposed to aircraft noise have poorer reading skills than children attending elementary school in a quieter setting.

In 1998, psychologists from Cornell conducted research with a group of German third and fourth graders exposed to noise from Munich International Airport. They discovered health problems such as higher blood pressure and boosted levels of stress hormones. The study, published in the January 1998 issue of *Psychological Science*, suggests that noise increases psychophysiological stress among children. "This study is probably the most definitive proof that noise causes stress and is harmful to humans," said Evans in a press release from Cornell.

In November 1998, a conference titled Noise Effects '98 was held in Sydney, Australia. Organized by the International Commission on Biological Effects of Noise, it was the seventh international conference concerning noise as a public health problem. The conference looked at noise's effects in nine areas, including its effects on sleep and its influence on performance and behavior, and evaluated the research that has been done thus far within these specific areas. Findings from the congress suggest that new standards for measuring noise's effects need to be refined so that the public can be made more aware of their relative strengths and weaknesses. **–Lindsey A. Greene**

RADON

Reducing Radon State by State

In August 2000, the U.S. Environmental Protection Agency (EPA) expects to finalize proposed regulations to protect people from exposure to radon through indoor air and drinking water. The regulations will provide flexibility in determining how to limit exposure to radon by allowing each state to focus its reduction efforts as it sees fit. Research suggests that 6% of U.S. homes contain more radon than the current EPA recommendation of 4 picocuries per liter (pCi/L). Radon from drinking water accounts for an estimated 2% of exposure.

The framework for this proposal was initiated in the Safe Drinking Water Act Amendments of 1996. The act directed the EPA to finalize standards for radon contamination, to be accompanied by a multimedia mitigation (MMM) program, which states may enact in one of two ways.

The first option calls for state programs requiring individual water systems to meet a less stringent proposed alternative maximum contaminant level of 4,000 pCi/L. States would also be expected to develop MMM programs to reduce radon in indoor air. At a cost of nearly $86 million dollars per year, the EPA says this is the most cost-effective radon risk reduction approach and the one it expects most states to adopt. If a state does not choose this first option, then individual water systems must either comply with a tighter proposed maximum contaminant level of 300 pCi/L in drinking water or conform to the 4,000 pCi/L standard and develop a state-approved MMM program plan to reduce indoor radon.

The proposed regulation does not set safety standards for airborne radon concentrations, but the EPA still recommends that households reduce indoor radon levels to a maximum of 4 pCi/L.

Under the proposed regulation, water companies would be required to begin quarterly monitoring for radon within three years after the final rule is published. Companies that agree to develop MMM programs would not have to begin the required monitoring until February 2005.

In most cases, radon is released to indoor air from the soil underneath homes and buildings as a by-product of the breakdown of uranium. A naturally occurring gas, radon is a human lung carcinogen contributing to about 20,000 lung cancer deaths every year in the United States, according to a 1999 report by the National Academy of Sciences on radon in indoor air. The U.S. Surgeon General has warned that radon is the second leading cause of lung cancer. If someone living in a house with high radon concentrations smokes, there is an even greater risk for household members to develop cancer.

Although a smaller source of radon, drinking water also presents the risk of stomach cancer. The EPA estimates that drinking water containing radon causes 168 cancer deaths per year, 11% of which are due to stomach cancer. **–Lindsey A. Greene**